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APPLICATION

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re Application of:

Richard S. Valpey, III et al.

Application No. 10/653,211

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For DISPENSER ASSEMBLY FOR AEROSOLS HAVING LOW VOLATILE ORGANIC COMPOUND (VOC) CONTENT

Examiner: Unassigned

Group Art Unit: 3746

JOINT DECLARATION OF RICHARD S. VALPEY III, CARY E. MANDERFIELD, AND PAUL A. CLARK

We, Richard S. Valpey III, Cary E. Manderfield, and Paul A. Clark, based upon our own personal knowledge, hereby declare the following:

1. Richard S. Valpey III holds a Ph.D. in Organic Chemistry, from The University of Rochester. For the past three years Dr. Valpey has held the position of Platform Leader at S.C. Johnson & Son, Inc. (S.C. Johnson). Prior to that, Dr. Valpey held the position of Senior Process Engineering Contractor at Monsanto Company for two years. Prior to that, he held the position of Senior Research Scientist of low VOC systems at the Sherwin-Williams Company for eight years. In these positions, Dr. Valpey has done considerable research and development in the fields of low VOC science, aerosol compositions, propellants, dispensers, and related technologies.

2. Cary E. Manderfield holds a Bachelors of Science in Biology, from the University of Wisconsin-Parkside. For the past three years Mr. Manderfield has held the position of Senior Research Scientist at S.C. Johnson. Prior to that, Mr. Manderfield held the position of Senior Research Toxicologist at S.C. Johnson for seven years. In these positions, Mr. Manderfield has done considerable research and development in the fields of aerosol compositions, propellants, dispensers, and related technologies.

3. Paul A. Clark holds a Ph.D. in Chemical Engineering, from the Virginia Polytechnic Institute and State University (Virginia Tech). For the past 18 Months Dr. Clark has held the position of Post Doctoral Fellow at S.C. Johnson. Prior to that, Dr. Clark was a Research Scientist at Luna Innovations, a small business that developed technology for the aerospace and defense industries. Since joining S.C. Johnson Dr. Clark has done considerable research and development in the fields of aerosol compositions, propellants, dispensers, and related technologies.

4. Glade® is the brand name for certain aerosol air fresheners sold by S.C. Johnson. Products and services sold under the Glade® brand are the subject of U.S. Patent Application No. 10/350,011 ("the '011 application") and U.S. Patent Application No.10/653,211 ("the '211 application"), which is a continuation-in-part of the '011 application.

5. Each of us is named as an inventor in the '211 application. Of the three of us, Mr. Manderfield only is named as an inventor in the '011 application.

6. In the course of developing the invention described in the '211 Application, we tested various commercially-available air freshener products to measure their product specifications (e.g., propellant pressure, propellant content, and valve design) and performance characteristics (e.g., particle size, spray rate, and product retention). The results of the tests are set forth below.

7. Dr. Valpey's involvement with the testing was primarily to determine the product specifications and performance characteristics to be measured and to oversee the testing.

8. Mr. Manderfield's involvement with the testing was primarily to design the tests necessary to measure the desired product specifications and performance characteristics.

9. Dr. Clark's involvement with the testing was primarily to conduct the product testing and to analyze the test results.

10. The commercially-available air fresheners tested, included (i) Glade® aerosol air freshener sold between about 1993 and about February, 2003, by S.C. Johnson and Son, Inc., located at Racine, Wisconsin ("Old Glade®"), (ii) Wizard® aerosol air freshener sold on or about May of 2001, by Reckitt Benckiser, Inc., located at Wayne, New Jersey ("Wizard®"), (iii) Airwick® aerosol air freshener sold on or about March of 2003, by Reckitt Benckiser, Inc., located at Wayne, New Jersey ("Airwick®"), (iv) Renuzit® aerosol air freshener sold on or about May of 2001, by Dial Corporation, located at Scotsdale, Arizona ("Renuzit®"), and (v) Powerhouse™ aerosol air freshener sold on or about December of 2002, by Personal Care Products, Inc., located at Bingham Farms, Michigan ("Powerhouse™"). The test results are shown in the following table.

COMMERCIALLY AVAILABLE PRODUCTS		COMMERCIAL PRODUCT				
		Old Glade®	Wizard®	Airwick®	Renuzit®	Powerhouse™
PRODUCT SPECIFICATIONS	Earliest Known Availability	1993	May-01	Mar-03	May-01	Dec-02
	Propellant Pressure (Type)	40 psig (B-40)	50 psig	60 psig	50 psig	60 psig
	Propellant Content (Wt%)	29.5	29.5	29.1	29.0	29.9
	Fill Weight (oz)	9.0	8.0	8.0	9.0	9.1
	Dip Tube ID (inch)	0.060	0.060	0.060	0.040	0.122
	Body Orifice (inch)	0.050	0.100	0.065	0.035	0.070
	Vapor Tap (inch)	0.020	0.020	0.020	0.020	0.020
	Stem Orifice(s) (inch)	2 x 0.020	1 x 0.050	1 x 0.025	1 x 0.050	2 x 0.020
	Exit Orifice (inch)	0.021	0.020	0.035	0.020	0.024
	Mechanical Breakup	breakup bar	none	none	none	none
PERFORMANCE	Particle Size - full (μm)	35.0	34.3	36.6	38.4	43.2
	Spray Rate - full (g/s)	0.89	0.88	1.50	0.82	1.10
	Particle Size @ 200g (μm)	34.3	34.2	36.3	34.8	38.2
	Spray Rate @ 200g (g/s)	0.82	0.80	1.36	0.73	1.43
	Product Retention (g)	8.8	0.9	1.6	0.8	3.0 (estimated)
	Quality (CV)	27.7	5.5	14.9	16.1	31.0

11. For the purposes of the testing, propellant pressure was measured with a Bourdon Style Pressure Gage (Matheson P/N 63-3112), using a method similar to ASTM standard D-3070, except testing was performed at room temperature (i.e., no water bath was used).

12. The testing procedure used to measure the propellant content of each commercially available product consisted of (i) weighing the full container of product, (ii)

puncturing the container and dispensing propellant gas from the container until no more propellant gas is expelled, (iii) waiting for 24 hours to allow additional propellant dissolved in the liquid product to come out of solution, (iv) again weighing the container (now without propellant gas), (v) emptying the container of residual aqueous liquid and rinsing with acetone to obtain a clean container, (vi) again weighing the clean, dry container to obtain to container weight, (vii) calculating the weight of propellant by measuring the difference in container weight between steps "i" and "iv", (viii) calculating the weight of product by measuring the difference in container weight between steps "i" and "vi", and (vii) expressing the propellant percent as 100% multiplied by the propellant weight (calculated in step "vii") divided by the total weight of product (calculated in step "viii"). This testing procedure was used to determine the propellant content of each of the commercially-available products.

13. For the purposes of the testing, fill weight was taken to be the fill weight of liquid product specified on the label of each commercially-available product (e.g., "NET WT 9OZ (255g)").

14. For the purposes of the testing, all orifice sizes were measured/determined using the smallest standard pin gage (Meyer gage company; model number c10) that fit through the orifice without excessive force. For orifices less than 0.011", an optical measurement inspection system (Inspection Systems Division of T & A Industrial; serial number 4162-90-265) was used to estimate the orifice diameters.

15. The testing procedure used to measure the particle size of the product dispensed from each commercially-available product consisted of (i) spraying the aerosol product for a period of approximately 5 seconds through the beam of a Malvern® Mastersizer 2600 Particle Size Analyzer from a horizontal distance of 11-16.0" (27.5-40.6 cm), and (ii) measuring the particle size of the dispensed product by laser diffraction analysis using a maximum cutoff size of 300 microns. This testing procedure was used to determine particle size of the product dispensed from each of the commercially-available products. This test was performed both when the containers were full and again when the containers weighed approximately 200g.

16. The testing procedure used to measure the spray rate of each commercially available product consisted of (i) weighing the full container of product, (ii) dispensing the

product for a predetermined period (about 10 seconds), (iii) again weighing the container of product, and (iv) calculating the difference in container weight between steps "i" and "iii" and dividing the difference by the predetermined period of time. This procedure is similar to ASTM standard 3069, except testing was performed at room temperature (i.e., no water bath was used). This testing procedure was used to determine the spray rate of each of the commercially-available products. This test was performed both when the containers were full and when the containers weighed approximately 200g.

17. The testing procedure for measuring product retention (i.e., the amount of product remaining in the container when the propellant is depleted) consisted of (i) dispensing the product from the container in a 10 second spray, (ii) waiting for at least 1 hour to allow thermal equilibration and to allow additional propellant dissolved in the remaining liquid product to come out of solution, (iii) repeating steps "i" and "ii" until no more product is expelled from the container (at a maximum of six sprays per day), (iv) weighing the depleted container, (v) cutting open the depleted container and rinsing any remaining contents away with acetone, (vi) drying the empty container, (vii) weighing the cleaned empty container, and (viii) calculating the difference in container weight between steps 'iv' and 'vii'. This testing procedure was used to determine the product retention of each of the commercially-available products.

18. A product's "Quality" value is a numerical estimation of the product's acceptability to consumers, based on the particle size of the dispensed spray, the spray rate, and the amount of liquid product remaining in the container when all the propellant is depleted. The Quality ("CV") values listed in the table were computed from the particle size, spray rate, and product retention values listed in the table, based on the following formula: $CV = 2.5(D-32) + 10|Q-1.1| + 2.6R$, where D = particle size, Q = spray rate, and R = product retention.

19. To the best of our knowledge, the products tested were commercially available at least as early as the date specified for each in the table above.

We hereby declare that all statements made herein of our own knowledge are true, and that all statements made on information and belief are believed to be true, and further that

these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-referenced applications or any patents issued thereon.

Dated this 27 day of April, 2004.

Richard S. Valpey III

Cary E. Manderfield

Paul A. Clark